

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
**Region I - EPA New England**

Drafted Date: 09/22/2017  
Finalized Date: 10/19/2017

**SUBJECT:** Inspection of Sims Metal Management, Johnston RI

**FROM:** Christine Sansevero, Senior Enforcement Coordinator, Air Technical Unit *CMS 10/19/17*

**THRU:** Steve Rapp, Unit Chief, Air Technical Unit *SAR 10/19/17*

**TO:** File

**I Facility Information**

- A. Facility Name: Sims Metal Management
- B. Facility Location: 15 Green Earth Avenue, Johnston, RI
- C. Facility Mailing Address: Same
- D. Facility Contact: Scott Jacobs, Regional Safety Director
- E. ICIS Air: #4400740070

**II Background Information**

- A. Date of inspection: September 2017 (6<sup>th</sup>, 15<sup>th</sup>, 18<sup>th</sup>, 20<sup>th</sup>)
- B. US EPA Representative(s): Multiple Day Inspection (see summary chart below)
- C. RIDEM Representative(s): None
- D. Federally Enforceable Regulations:  
Rhode Island Air Pollution Control Regulations as applicable including  
Regulation 9, Air Pollution Permitting

**III Purpose of Inspection**

The purpose of the visit was to observe potential to emit testing that EPA ordered SMM to conduct. SMM operates a 7000 hp metal shredder to recover metal from scrap light iron and automobiles. EPA is requiring SMM to test emissions from this shredder to quantify emissions of VOC and other pollutants.

**IV. Facility Description**

**A. Facility History:**

Sims Metal Management (SMM) owns and operates a 9.5-acre metal processing facility on a Green Earth Avenue in Johnston, Rhode Island that collects and processes ferrous and non-ferrous scrap metals. The facility started construction in October 2012 and went into operation in October 2013. SMM employs 23 people and owns five trucks and several hundred roll offs.

EPA first visited the site on September 5, 2014 to conduct an inspection. At that time, the top of the shredder was open to the air and partial segments of sheet metal existed on only two sides. The shredder was running that day, and the inspectors observed significant opacity and physical pieces of shredded material emanating from the shredder (see photos in the file). EPA issued a 114 testing order to SMM for its Johnston and North Haven locations in April 2015. In September and October 2015, EPA received several complaints about visible emissions coming from SMM's shredder in Johnston. EPA again visited the site in Johnston on October 14, 2016 to conduct an inspection. SMM had added sheet metal segments to surround three sides of the shredder as well as the top. (See photos in file). There is a large gap between the sheet metal on sides and the sheet metal on the top. SMM also has added rubber curtains on the inlet and outlet of the shredder. The curtains do not come all the way to the sheet metal. There is gap between them and the sheet metal. This configuration constitutes a partial enclosure around the shredder.

#### B. Number of Employees and Working Hours

The facility operates one shift a day, five days per week, 52 weeks per year. This shift is typically 12 hours per day from 6 am to 6 pm.

#### C. Process Description

SMM collects ferrous and non-ferrous metals from various different sources such as municipalities, manufacturers, small business and the public. Processing of the scrap materials begins with the loading and conveying of the feed materials into an electrically operated 7,000 horsepower (HP) shredder<sup>1</sup>. The shredded material is then conveyed through various separating mechanisms. Magnetic separators are used to separate the shredded metals. Recovered scrap metals are sold to end-users, such as manufacturers, mills, foundries, secondary smelters, and metal brokers. There is a non-magnetic metal fraction from the waste material ("fluff") which is generally transported to SMM's facility in North Haven, Connecticut for further processing.

#### V. Stack Testing Site Visit

The EPA team visited the site on September 6, September 15, September 18, and September 20. The following table summarize the purpose of the visits as well as the EPA attendees:

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<sup>1</sup> The prior shredder, which had a 9,000 HP electric motor, failed in April 2017 and was replaced by the current 7,000 HP shredder in May 2017.

<b>Date</b>	<b>Purpose</b>	<b>EPA Attendees</b>
September 6, 2017	Pre-Test Meeting	Christine Sansevero Abdi Mohamoud Bill Osbahr Steve Rapp Tom Olivier
September 15, 2017	Stack Testing – Day 1 (Runs 1 and 2)	Christine Sansevero Abdi Mohamoud Bill Osbahr Steve Rapp Tom Olivier
September 18, 2017	Stack Testing – Day 2 (Runs 3 and 4)	Christine Sansevero Abdi Mohamoud Bill Osbahr
September 20, 2017	Stack Testing – Day 3 (Runs 5 and 6)	Abdi Mohamoud Bill Osbahr

### **September 6 – Pre-Test Meeting**

The following people from the SMM team attended the pre-test meeting:

Scott Jacobs	SMM	Regional Safety Director
John Sartori	SMM	General Manager
Mr. Brian Sackett	SMM	National Shredder Director
Craig Cunningham	SMM	
Rich Trzupek	Trinity Consultants	
Kristine Davies	Trinity Consultants	
Jon Schaefer	Robinson & Cole	

EPA and SMM officials met in the conference room to discuss the stack testing that was to take place on September 15, 18 and 20. Mr. Trzupek explained that the natural draft opening was achieving a flow of 250 ft/min prior to the modifications the stack test consultant made to the partial enclosure around the shredder. The stack test team had not yet performed flow testing with fan, but they would do so the day before the testing along with cyclonics.

The 10 HP fan is a variable drive fan and you can see the amperage on the cubical. SMM will use a hot wire anemometer and record the amperage every 10 minutes during the test. Mr. Trzupek explained that they can measure pressure drop (“delta P”) when the shredder was off. At Mr. Osbahr’s request, Mr. Trzupek agreed to install a ¼ inch line to measure delta P from inside the enclosure to ambient. This would allow for measurement of delta P when the shredder was on.

The group then walked over to the shredder to observe the partial enclosure, fan, and sample locations. Mr. Osbahr noted that the sample ports need to be in the same plane. SMM agreed to move one of the sample ports prior to testing. Mr. Trzupek confirmed that the day before the testing there would be smoke tubes, delta P measurement and

cyclonics measurement. Mr. Rapp took a number of photos of the sampling location and surroundings.

The group returned to the conference room for further discussion. Mr. Trzupsek confirmed that he would fill out the table that EPA provided to help organize the results of the stack testing. He also explained that the stack test consultant, Clean Air, would be using the lab "Enthalpy" to analyze PM, Metals, and TO-15 results.

Mr. Rapp asked some questions about how the shredded materials would be stockpiled for testing. Mr. Schaefer explained that it is SMM's typical procedure to use its certified truck scale to weigh loads of light iron and autos as they arrive on site. SMM would continue this procedure for the stack testing and set aside sufficient light iron and autos to conduct the stack testing. Mr. Schaefer explained that the piles are segregated for light iron and autos and he explained that SMM planned to have 315 tons of light iron and 315 tons of autos for each one hour run. SMM would also have approximately 10 tons light iron and 10 tons of autos in reserve in the event that more light iron or autos were needed. Mr. Schaefer explained that the loader had the ability to weigh light iron and autos in the field. Mr. Rapp and Mr. Osbahr requested that SMM prepare a written summary of how it would prepare the piles and document their associated weights. In particular, EPA asked SMM to explain how it would ensure that sufficient material would be available for testing as well as how it would account for any excess material after each test run was completed. Mr. Shafer agreed to provide a written summary.

SMM confirmed that its suppliers do the depolluting of the vehicles and SMM does a spot check.

Mr. Osbahr inquired about the leak checks that were required by Method 5 and Method 29. Mr. Trzupsek confirmed that a leak check would be performed at the end of each run. Mr. Osbahr explained that if they don't pass the leak check at the end of the run, they may need to redo that run.

Mr. Osbahr indicated that he would need to be on the stack test platform and at the stack test trailer during testing. Mr. Rapp asked if there would be a place on-site where some members of the EPA team could safely observe the testing. Mr. Jacobs indicated that the inspector shed would be a possible location. SMM would confirm and get back to the EPA team.

### **September 15 – Stack testing – Day 1**

#### **Arrival**

The EPA team arrived on site at approximately 7:45 am. Mr. Osbahr and Mr. Bobbs came separately and were already on site when the rest of the EPA team arrived. After checking-in at the main building, the team was escorted to the shredder. Mr. Osbahr explained that each run would take place over 60 minutes. The stack test team, Clean Air Engineering, would conduct a port change at 30 minutes to allow for sampling along a horizontal as well as a vertical traverse (as required by Method 1). The stack

test team would also conduct a leak check at the 30-minute mark. Mr. Osbahr also explained that the first stack test run would be 50% autos / 50% light iron. The second run would be 75% autos / 25% light iron.

The following individuals were part of Clean Air Engineering's Stack Test Team:

Colleen Merringer	Sample Train Technician
Christian Young	Sample Train Technician
Bill Ansell	Project Lead
Eric Doak	Sample Recovery Technician

#### Day 1 - Run 1

Ms. Sansevero and Mr. Rapp were then escorted to the inspector shed by Mr. Sackett and Ms. Davies. Mr. Olivier and Mr. Mohamoud stayed back in the maintenance building behind the shredder, but were able to observe the testing from the front side of the shredder. Ms. Sansevero set up the video camera (a Sony Handy Cam #S98971) to record the runs. From the inspector shed, the EPA inspectors had a clear view of the conveyor belt. The EPA inspectors could also see the two cranes with grappling hooks. One was located on the side of the conveyor where autos were stockpiled and the other was located on the side of the conveyor where light iron was stockpiled. The EPA inspectors could see the crane that was moving the light iron onto the conveyor more clearly than they could see the one that was moving the autos.

According to Mr. Sackett, the conveyor had been pre-loaded with light iron and autos from the pre-weighed piles. Ms. Sansevero took two sample videos just to check to see if the camera was working. The shredder started at 9:01 am and Ms. Sansevero started filming. Mr. Rapp began to tally the number of grapples of autos and light iron in his field book. About five minutes later, Mr. Rapp and Ms. Sansevero observed a great deal of visible grayish smoke at the entrance to the shredder. It was not captured by the rubber curtains and seemed as if it was being pushed out of the partial enclosure. It appeared as if the 15,000 scfm fan on the front side of the shredder was not sufficient to pull enough air to capture all of the exhaust coming off the shredder<sup>2</sup>.

Ms. Davies was informed by Mr. Trzupsek via text message that the stack test sampling began at 9:14 am. The stack test team needed to conduct moisture sampling before it could begin the stack test run. Moisture sampling cannot take place until the shredder reaches normal operating conditions, hence the 13-minute delay. The shredder and the

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<sup>2</sup> During the discussion regarding the testing order, SMM requested that it be allowed to proceed with testing without a Method 204 enclosure. SMM was concerned that it would be difficult, expensive, and create some safety challenges if it were to construct a Method 204 enclosure around the shredder. After much debate, EPA agreed to SMM's request to construct a partial enclosure. SMM agreed to meet the face velocity requirements of Method 204. SMM had originally indicated the fan used during the testing would be a 30,000 scfm fan. However, the test protocol, described a 15,000 scfm. EPA inquired about this change. SMM responded that the 15,000 scfm fan would be sufficient for maintaining a face velocity of 200 feet per second.

sampling stopped at 9:44 am. The stack test team had completed the first half of Run 1. The shredder started again at 10:01 am. Sampling started at 10:04 am. SMM had to add the pre-weighed extra piles of both light iron and autos to the pile to ensure that there would be enough material to complete the second half of the run. The shredder and the sampling stopped at 10:34 am. The stack test team had completed the first half of Run 2.

Trucks arrived during the testing delivering autos and light iron. Mr. Sackett indicated these were just normal shipments. Mr. Rapp noted that the autos were either crushed cubes or flattened. Some were just chassis or shells without engines.

At the end of the run, Ms. Sansevero inquired about the remaining material on the conveyor belt. She explained that material would need to be weighed along with the left over light iron and autos to determine the total input to the shredder during the run. SMM then ran the conveyor backwards and the material was removed from the conveyor and weighed along with the other pre-weighed material that had not be processed. Mr. Sackett indicated that the loader scale would be used to weigh the unprocessed material.

After the first run was complete, the EPA team and the SMM team came together for a brief discussion at the shredder, near the sampling locations. Mr. Osbahr explained that it was likely they would only need to conduct the moisture testing once, on the first run. He also explained that on subsequent runs, the shredder would run for 3 minutes prior to the start of sampling. Ms. Sansevero explained that it would be important to have accurate total weights of material shredded. Ms. Sansevero went over the need to account for the various piles (starting piles, supplemental piles, material on the conveyor, and left over piles, etc.) with Mr. Schaefer. Mr. Schaefer indicated that SMM would weigh all of this material and provide the weights to EPA.

#### Day 1 – Run 2

The second run was ready to begin around noon. Ms. Sansevero, Mr. Rapp, Mr. Olivier, Mr. Mohamoud, and Mr. Bobbs all returned to the inspector shed to observe the second run. Mr. Schaefer, Mr. Sackett, and Ms. Davies were also present. Mr. Bobbs brought the Forward Looking Infrared (FLIR) camera to take FLIR video from this vantage point.

The shredder started at 12:18 pm. Ms. Sansevero began filming with the video camera. Mr. Bobbs began filming with the FLIR camera and was able to see the presence of hydrocarbons. Mr. Bobbs showed several representatives from SMM his screen on the FLIR camera.

Sampling began at 12:21 pm. The shredder and sampling stopped at 12:51 pm. Ms. Sansevero stopped the camera and checked its settings. She noticed the date and time were not correct. The time was correct but was set for PM instead of AM. She adjusted the camera to the proper date and time. Ms. Sansevero began filming with the video camera. The shredder started for the second half of Run 2 at 1:03 pm. Sampling began at 1:06 pm. The shredder and the sampling stopped at 1:36pm.

Mr. Rapp noted bluish grey smoke emanating from the shredder. He and Mr. Mohamoud estimated opacity of approximately 40% for many minutes and perhaps as much as 50% at times. They noted an opacity of approximately 20% continuously.

The following table summarizes the sampling times for both runs:

Date	Type of Run (Autos/ Light Iron)	Run #	Start of Video / Start of Shredder	Start of Sampling	Stop of Shredder / Stop of Sampling	Stop of Video
9/15/17	50/50	Run-1 1 <sup>st</sup> half	9:01 am*	9:14 am	9:44 am	9:51 am
9/15/17	50/50	Run-1 2 <sup>nd</sup> half	10:01 am*	10:04 am	10:34 am	10:36 am
9/15/17	75/25	Run-2 1 <sup>st</sup> half	12:18 pm*	12:21 pm	12:51 pm	12:52 pm
9/15/17	75/25	Run-2 2 <sup>nd</sup> half	1:03 pm	1:06 pm	1:36 pm	1:36 pm

\*note the time stamp on the camera was not set properly for these runs. The time was 12 hours off.

The following table summarizes the number of grapples of autos and light iron that Mr. Rapp noted in his field book for both runs:

Date	Type of Run (Autos/Light Iron)	Run #	# Grapples of Autos	# Grapples of Light Iron
9/15/17	50/50	Run-1	179	200
9/15/17	75/25	Run-2	190	94

Throughout the day, Mr. Rapp took a number of photos of the site including the left over piles of light iron and autos.

## September 18 – Stack testing – Day 2

### Arrival

Ms. Sansevero and Mr. Mohamoud arrived on site at approximately 7:30 am. Mr. Osbahr arrived shortly thereafter. The EPA team checked in at the main building. Ms. Sansevero inquired about the weights from the first day of stack testing. Mr. Schaefer provided a summary sheet with all the weights as well as copies of the weight tickets. He explained that he planned to send an email with a description of the packet as well as electronic copies the packet. The SMM representatives then escorted the EPA team to the shredder.

### Day 2 - Run 3 and Run 4

Ms. Sansevero set up the video camera again to record each of the stack test runs. Note that on the second half of Run 3, the camera battery failed. Ms. Sansevero also noted the number of grapples of autos and light iron for each run.

The following table summarizes the sampling times for both runs:

Date	Type of Run (Autos/Light Iron)	Run #	Start of Video / Start of Shredder	Start of Sampling	Stop of Shredder / Stop of Sampling	Stop of Video
9/18/17	50/50	Run-3 1 <sup>st</sup> half	8:36 am	8:39 am	9:09 am	9:11 am
9/18/17	50/50	Run-3 2 <sup>nd</sup> half	9:18 am	9:23 am	9:53 am	9:53 am**
9/18/17	75/25	Run-4 1 <sup>st</sup> half	11:12 am	11:14 am	11:44 am	11:45 am
9/18/17	75/25	Run-4 2 <sup>nd</sup> half	12:01 pm	12:03 pm	12:33 pm	12:33 pm

\*\*note, the battery on the video camera failed at some point during the run.

The following table summarizes the number of grapples of autos and light iron that Ms. Sansevero noted in her field book for both runs:

Date	Type of Run (Autos/Light Iron)	Run #	# Grapples of Autos	# Grapples of Light Iron
9/18/17	50/50	Run-3 1 <sup>st</sup> half	81	97
9/18/17	50/50	Run-3 2 <sup>nd</sup> half	67	120
<i>Total:</i>			<i>148</i>	<i>217</i>
9/18/17	75/25	Run-4 1 <sup>st</sup> half	111	36
9/18/17	75/25	Run-4 2 <sup>nd</sup> half	86	72
<i>Total:</i>			<i>197</i>	<i>108</i>

Ms. Sansevero also took a number of photos of the left over light iron and auto piles.

Mr. Osbahr noted that SMM was removing the gas tanks from the autos and then driving over the gas tanks to flatten them.

After the stack testing was complete, the group returned to the main building for a brief close out conference.

Ms. Sansevero asked about the removal of the gas tanks. SMM representatives explained that removing the air from the tanks helps minimize what they call



“incidents” or fires in the shredder. They further explained that the tanks are shredded after they have been flattened.

Mr. Osbahr reported that the glass sample line broke when it was removed during the second half of Run 4. He noted that there were quite a few hairs/fibers on the nozzle and that anything that breaks the plane of the nozzle is PM. If PM is on the nozzle it is not being measured, biasing PM and metals results low. Mr. Osbahr showed the group the photo he took of the nozzle. The SMM representatives indicated that the cyclone would normally pull the PM from the shredder but that the partial enclosure that was constructed for the testing modifies the effect of the cyclone.

### **September 20 – Stack testing – Day 3**

Mr. Mohamoud and Mr. Osbahr were on-site for the stack testing. Mr. Mohamoud used the Sony Handy Cam #S98971 to record Run 5, and a Cannon Power Shot #S98752 to record Run 6. Mr. Mohamoud also took some still photos of the left over piles of autos and light iron.

Mr. Mohamoud was not able to record the full length of each run. The following table summarizes Mr. Mohamoud’s video log:

<b>Date</b>	<b>Type of Run (Autos/ Light Iron)</b>	<b>Run #</b>	<b>Start of Video</b>	<b>Stop of Video</b>
9/20/17	50/50	Run-5 1 <sup>st</sup> half	11:07 am	11:34 am
9/20/17	50/50	Run-5 2 <sup>nd</sup> half	11:47 am	12:21 pm
9/20/17	75/25	Run-6 1 <sup>st</sup> half	1:44 pm	2:15 pm
9/20/17	75/25	Run-6 2 <sup>nd</sup> half	2:56 pm	3:34 pm

Mr. Osbahr recorded the start and stop times of the sampling:

<b>Date</b>	<b>Type of Run (Autos/ Light Iron)</b>	<b>Run #</b>	<b>Start of Sampling</b>	<b>Stop of Sampling</b>
9/20/17	50/50	Run-5 1 <sup>st</sup> half	11:10 am	11:34 am
9/20/17	50/50	Run-5 2 <sup>nd</sup> half	11:50 am	12:20 pm
9/20/17	75/25	Run-6 1 <sup>st</sup> half	1:44 pm	2:15 pm
9/20/17	75/25	Run-6 2 <sup>nd</sup> half	3:03 pm	3:33 pm

The following table summarizes the number of grapples of autos and light iron that Ms. Mohamoud noted in his field book:

Date	Type of Run (Autos/Light Iron)	Run #	# Grapples of Autos	# Grapples of Light Iron
9/20/17	50/50	Run-5 1 <sup>st</sup> half	86	68
9/20/17	50/50	Run-5 2 <sup>nd</sup> half	100	86
<i>Total:</i>			<i>186</i>	<i>154</i>
9/20/17	75/25	Run-6 1 <sup>st</sup> half	107	96
9/20/17	75/25	Run-6 2 <sup>nd</sup> half	57	23
<i>Total:</i>			<i>164</i>	<i>119</i>

Mr. Osbahr called Ms. Sansevero after the testing on Day 3 was complete. He reported that Run 6 had failed the leak check. This would adversely affect the PM and metals data from that run. The hydrocarbon data appeared to be acceptable, but the PM and metals data were not. Given this, Ms. Sansevero, Mr. Rapp and Mr. Osbahr decided it was not necessary for SMM to conduct another run. However, the PM and metals data for Day 3, Run 6 (75% autos / 25% light iron), would not be averaged with the results from the other runs.